Findings and Recommendations

Finding 1: Bear Stearns Was Compliant With The CSE Program's Capital Ratio And Liquidity Requirements, But The Collapse Of Bear Stearns Raises Questions About The Adequacy Of These Requirements [65]

Bear Stearns was compliant with the capital and liquidity requirements; however, its collapse raises serious questions about the adequacy of these requirements.

Capital [66]

Adequacy of Capital Levels

In 2004, the Commission adopted rule amendments under the Securities and Exchange Act of 1934, which created the CSE program and allowed broker-dealers to apply for an exemption from the net capital rule and instead use the alternative capital method.[67] The Commission designed the CSE program to be broadly consistent with the Federal Reserve's oversight of bank holding companies. However, the CSE program "reflects the reliance of securities firms on mark-to-market accounting [[68]] as a critical risk and governance control. Second, the design of the CSE regime reflects the critical importance of maintaining adequate liquidity in all market environments for holding companies that do not have access to an external liquidity provider." [69]

If approved, a firm must comply with capital requirements at both the holding company and the broker-dealer levels. The CSEs at the holding company level are required to maintain an overall Basel capital ratio of not less than the Federal

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[65] The capital ratio requirement is stipulated by Basel II, which TM incorporated into the CSE program. TM developed the CSE program's liquidity requirements.

[66] Capital is the difference between a firm's assets and liabilities.
Source: Answers to Frequently Asked Investor Questions Regarding The Bear Stearns Companies, Inc. Commission. 8 March 2008. <http://www.sec.gov/news/press/2008/2008-46.htm>.

[67] The alternative capital method is based on mathematical models and scenario testing while broker-dealers operating under the standard net capital rule must meet certain ratios and maintain minimum net capital levels based on the type of securities activities they conduct.

[68] Mark-to-market accounting refers to a requirement that the securities must be valued at fair market value in accordance with Generally Accepted Accounting Principles.

[69] Source: *Examining Regulation and Supervision of Industrial Loan Companies* Before U.S. Senate Committee on Banking, Housing and Urban Affairs, 110th Cong. (October 4, 2007) (statement of Erik Sirri, Director of TM, Commission).

Reserve's 10 percent "well-capitalized" standard for bank holding companies.[70] In addition, a broker-dealer calculating its capital using the alternative method must maintain tentative net capital[71] of at least $1 billion and net capital of at least $500 million. If the tentative net capital of a broker-dealer using alternative method falls below $5 billion, it must notify the Commission.[72]

According to Bear Stearns' data, it exceeded the required capital amounts at the holding company and broker-dealer level the entire time it was in the CSE program, including during the week of March 10, 2008.[73] Although Bear Stearns was compliant with the capital requirements, there are serious questions about whether the capital requirement amounts were adequate.[74] For instance, some individuals have speculated that Bear Stearns would not have collapsed if it had more capital than was required by the CSE program. In fact, a former Director of TM has stated:[75]

> The losses incurred by Bear Stearns and other large broker-dealers were not caused by 'rumors' or a 'crisis of confidence,' but rather by inadequate net capital and the lack of constraints on the incurring of debt.

Increased Access to Secured Financing

Notwithstanding the fact that Bear Stearns was compliant with the CSE program's capital requirements, there are serious questions about whether Bear Stearns had enough capital to sustain its business model. As the subprime crisis unfolded, Bear Stearns' cost of unsecured financing tended to increase. For example, by March 2008, a ten-year bond which had recently been issued at a spread of 362 basis points over Treasury rates was trading at 460 basis points over Treasury rates. The high spread indicates that market participants believed that Bear Stearns' creditworthiness was deteriorating in a manner consistent with downgrades by ratings agencies. According to the expert retained by the OIG in connection with this audit,[76] the high cost of financing tended to undermine the

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[70] Source: SEC [Commission] Holding Company Supervision with Respect to Capital Standards and Liquidity Planning. Commission. 7 Mar 2007. <http://www.sec.gov/divisions/marketreg/hcliquidity.htm>.

[71] Tentative capital is net capital before deductions for market and credit risk.

[72] Source: Final Rule: Alternative Net Capital Requirements for Broker-Dealers That Are Part of Consolidated Supervised Entities (69 Fed Reg. 34.428). Commission. 21 June 2004. <http://www.sec.gov/rules/final/34-49830.htm>.

[73] Source: Chairman Cox Letter to Basel Committee in Support of New Guidance on Liquidity Management. Commission. 14 March 2008. <http://www.sec.gov/news/press/2008/2008-48.htm>.

[74] It is worth noting that prior to the current mortgage crisis, a main concern surrounding the securities industry was a real/perceived lack of competitiveness with overseas markets. One specific area of concern was that U.S. firms were potentially at a competitive disadvantage because U.S. regulators were requiring excessive capital compared to foreign banks. Source: Sustaining New York's and the US' Global Financial Services Leadership (Recommendation 6, page 24) by McKinsey & Company.

[75] Source: Pickard Lee. "SEC's [Commission] Old Capital Approach Was Tried-and-True." American Banker August 8, 2008.

[76] Professor Albert S. (Pete) Kyle was retained by the Office of Inspector General (OIG) to provide assistance with this audit. See Appendix III for Professor Kyle's Curriculum Vitae and the Methodology section of Appendix IV.

viability of Bear Stearns' business model, which relied heavily on leverage. Therefore, to preserve the viability of its business model, Bear Stearns had a strong incentive to lower its financing costs. One way to lower borrowing costs is to raise new equity capital, thus providing a larger equity cushion to protect unsecured lenders. To the extent that secured financing was cheaper than unsecured financing, another way for Bear Stearns to lower its borrowing costs was to shift its funding model from unsecured to secured financing.

From April 2006 to March 2008, Bear Stearns' Basel capital ratio decreased from 21.4 percent to 11.5 percent.[77] TM memoranda suggest that in March 2008, TM inquired about whether Bear Stearns was contemplating capital infusions, but the memorandum does not suggest that TM exerted influence over Bear Stearns to raise additional capital.[78] The OIG expert was unable to find TM memoranda indicating that TM had formally required or informally pressured Bear Stearns to raise additional equity capital prior to March 2008. In this sense, TM acted as though it did not believe it had a mandate to compel Bear Stearns to raise additional capital as long as its Basel capital ratio was greater than 10%. In fact, Bear Stearns did not raise additional capital during this time in 2007 or 2008.

According to TM's documentation of its meetings with Bear Stearns, in November 2006, Bear Stearns initiated a plan to increase its availability of secured funding at the holding company level.[79] One component of this plan involved a tri-party repurchase agreement[80] with secured lenders, giving Bear Stearns access to $1 to $1.5 billion from each lender.[81] Bear Stearns' secured borrowings were initially for terms of 30 days, with the goal of extending the terms to six months to one year.[82] By May 2007, Bear Stearns' short-term borrowing was 60 percent secured and by September 2007, it was 74 percent secured.[83] Finally, by March 2008, Bear Stearns' short-term borrowing was 83 percent secured.[84] Nevertheless, Bear Stearns was still unable to obtain adequate secured funding to save the firm in March 2008.

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[77] Source: Bear Stearns monthly Commission filings.

[78] "We (Eric Sirri I believe) inquired about any discussions they were having at the moment in terms of capital infusions. Allan [sic] [Schwartz, the President and Chief Executive Officer of Bear Stearns] said there were no 'terribly current discussions'. They had hired Lazard to advise them but that was on "slow burn" and that with the time it would take to get that done it wouldn't help (rumors would cause more damage in the meantime)."
Source: TM internal memorandum (file name: "Bear Stearns March Notes - SMS.doc").

[79] Source: TM's internal quarterly meeting memoranda with Bear Stearns for the 4th quarter 2006, 1st quarter 2007, 2nd quarter 2007, and 3rd quarter 2007.

[80] In a tri-party repo arrangement, a third party (in this case JP Morgan) acts as a custodian for loans between Bear Stearns and other lenders. The custodian holds Bear Stearns assets as collateral for the loans from the other lenders. Bear Stearns used this tri-party repurchase agreement (repo) facility to finance assets which were otherwise difficult to fund.

[81] Source: TM's internal quarterly meeting memorandum with Bear Stearns for the 4th quarter of 2006.

[82] Source: TM's internal quarterly meeting memorandum with Bear Stearns for the 4th quarter of 2006.

[83] Source: TM's internal quarterly meeting memoranda with Bear Stearns for the 2nd quarter 2007 and 3rd quarter 2007.

[84] Source: TM internal memorandum (file name: BS Monthly Liquidity Call_03-06-08.doc).

Bear Stearns' increasing reliance on secured funding indicates that, although it appeared to be compliant with CSE program's capital requirement, the market did not perceive it to be sufficiently capitalized to justify extensive unsecured lending. In this sense, Bear Stearns was not adequately capitalized.

These facts illustrate that although Bear Stearns was compliant with the CSE program's ten percent Basel capital requirement, it was not sufficiently capitalized to attract the funding it needed to support its business model. Although the Commission has maintained that liquidity (not capital) problems caused Bear Stearns' collapse, this audit found that it is entirely possible that Bear Stearns' capital levels could have contributed to its collapse by making lenders unwilling to provide Bear Stearns the funding it needed.

The fact that Bear Stearns collapsed while it was compliant with the CSE program's capital requirements raises serious questions about the adequacy of the CSE program's capital ratio requirements.

The CSE capital requirements are broadly consistent with the Basel II framework. The Basel II framework is based on three pillars: (1) minimum capital requirements, (2) supervisory review, and (3) market discipline in the form of increased public disclosure.[85] CSE firms calculate their capital ratios in a manner consistent with a models-based approach of pillar 1. Under pillar 2, supervisors are required to ensure that banks comply with the minimum capital requirements of pillar 1; address risks not fully captured by pillar 1, including liquidity risk and credit concentration risk; and encourage good risk management practices. Under pillar 2, supervisors should expect banks to operate above the minimum regulatory capital ratios, and should intervene at an early stage to prevent banks from falling below minimum levels required to support the risk characteristics of a particular bank, including requiring banks to raise additional capital immediately.[86] Pillar 3 establishes disclosure requirements that aim to inform market participants about banks' capital adequacy in a consistent framework that enhances comparability.[87] The Basel II framework does not dictate a maximum capital ratio, but instead gives the supervisor the ability to set a high enough capital ratio to be consistent with the characteristics of the banks it regulates.

Recommendation 1:
The Division of Trading and Markets, in consultation with the Board of Governors of the Federal Reserve System and the Basel Committee should: (1) reassess the guidelines and rules regarding the Consolidated Supervised Entity (CSE)

[85] Source: GAO. Bank Regulators Need to Improve Transparency and Overcome Impediments to Finalizing the Proposed Basel II Framework. Report No. 07-253, page 20. February 15, 2007.
[86] Source: Basel Committee on Banking Supervision. International Convergence on Capital Measurement and Capital Standards, June 2006, paragraphs 9 and 756-760. < http://www.bis.org/publ/bcbs128.pdf>.
[87] Source: GAO. Bank Regulators Need to Improve Transparency and Overcome Impediments to Finalizing the Proposed Basel II Framework. Report No. 07-253, page 91. February 15, 2007.

firms' capital levels; and (2) identify instances (*e.g.*, a firm's credit rating is downgraded, or its unsecured debt trades at high spreads over Treasuries) when firms should be required to raise additional capital, even if the firm otherwise appears to be well capitalized according to CSE program requirements.

Liquidity [88]

The Commission designed the CSE program to ensure that, in a stressed environment, a firm could withstand the loss of its unsecured financing for up to one year,[89] under the assumption that secured funding for liquid assets would be available. In addition, the liquidity analysis assumes that any assets held in a regulated entity are unavailable for use outside of the entity to deal with liquidity issues elsewhere in the consolidated entity.[90] The CSE program's guidelines on liquidity implement supervisory principles concerning liquidity in a manner that attempts to be consistent with pillar 2 of Basel II.[91]

According to agreements between the Commission and the United Kingdom's Financial Services Authority entered into in April 2006, each CSE is required to maintain a liquidity portfolio of cash or highly liquid debt and equity securities of $10 billion, with the exception of Bear Stearns, which was required to maintain a liquidity portfolio of $5 billion. The liquidity requirement for Bear Stearns was lower because it was the smallest CSE. Bear Stearns was continuously compliant with this requirement.

Bear Stearns initiated a plan in November 2006 to increase its liquidity levels and in fact (according to TM data), it significantly increased its liquidity levels from

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[88] According to the Commission, "[i]t is important to realize capital is not synonymous with liquidity. A firm can be highly capitalized, that is, can have more assets than liabilities, but can have liquidity problems if the assets cannot quickly be sold for cash or alternative sources of liquidity, including credit, obtained to meet other demands. While the ability of a securities firm to withstand market, credit, and other types of stress events is linked to the amount of capital the firm possesses, the firm also needs sufficient liquid assets, such as cash and U.S. Treasury securities, to meet its financial obligations as they arise.

Accordingly, large securities firms must maintain a minimum level of liquidity in the holding company. This liquidity is intended to address pressing needs for funds across the firm. This liquidity consists of cash and highly liquid securities for the parent company to use without restriction."
Source: Answers to Frequently Asked Investor Questions Regarding The Bear Stearns Companies, Inc. Commission. 18 March 2008. <http://www.sec.gov/news/press/2008/2008-46.htm>.

[89] Source: Risk Management and its Implications for Systemic Risk Before the U.S. Senate Subcommittee on Securities, Insurance, and Investment Committee on Banking, Housing, and Urban Affairs, 110th Cong. (June 19, 2008) (statement by Erik Sirri, Director of TM, Commission).

[90] Source: SEC [Commission] Holding Company Supervision Program Description. Commission. 5 June 2008. <http://www.sec.gov/divisions/marketreg/hcsupervision.htm>.

[91] Sources for this information include:

- Basel Committee on Banking Supervision. International Convergence on Capital Measurement and Capital Standards, June 2006, paragraphs 738 and 741. < http://www.bis.org/publ/bcbs128.pdf>; and
- Basel Committee on Banking Supervision. Sound Practices for Managing Liquidity in Banking Organizations. February 2000. <http://www.bis.org/publ/bcbs69.pdf?noframes=1>.

May 2007 until it suddenly collapsed during one week in March 2008.[92] According to the Commission, Bear Stearns collapsed because it experienced a liquidity crisis when it lost its secured financing. The collapse of Bear Stearns thus indicates that the CSE program's liquidity guidelines (implementing the spirit of pillar 2 of Basel II) are inadequate in two respects. First, the time horizon over which a liquidity crisis unfolds is likely to be significantly less than the one-year period. Second, secured lending facilities are not automatically available in times of stress.

Bear Stearns' liquidity planning indicates that Bear Stearns was well aware of these impractical aspects of the CSE program's approach to liquidity more than a year before it failed. At a quarterly meeting with TM in April 2006, Bear Stearns told TM that it had developed a 60-day cash inflow and outflow analysis that it could use to track cash flows on a daily basis.[93] Bear Stearns told TM that the 60-day stress test "provides a detailed cash inflows and outflows analysis during the most critical part of a liquidity crisis."[94] The 60-day analysis, however, did not assume that secured funding was always available. Instead, the analysis assumed the availability of existing credit lines.[95] A 60-day period corresponds more closely than a one-year period to the timeframe over which a liquidity crisis unfolds. A 60-day period also corresponds to a time period over which a firm can raise new equity capital in an orderly manner. In this sense, Bear Stearns realized that the one-year period was not realistic and also recognized that secured funding might not be available in times of stress.

In November 2006, Bear Stearns also undertook efforts to line up *committed* secured lending facilities. The fact that Bear Stearns made a special effort to line up committed secured lending facilities indicates that Bear Stearns did not think that such facilities would automatically be available in a stressed environment. Bear Stearns told TM that the secured funding initiative was improving the firm's performance in the 60-day stress scenarios, because the 60-day stress scenarios did not assume that secured funding would always be available as contemplated by the CSE program's one-year liquidity stress test. Bear Stearns planned to extend its 60-day stress model to one year and to modify its analysis to include unused credit lines only to the extent that they were committed.[96] As part of its secured funding initiative, Bear Stearns planned to use uncommitted lines of credit on an ongoing basis, thus increasing its access

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[92] According to the Commission, Bear Stearns had a high liquidity level of $21 billion in early March 2008 (*i.e.*, before the week of March 10) compared to $7.6 billion in May 2007 (according to TM data). Bear Stearns' required liquidity was $5 billion.

[93] Source: TM's internal quarterly meeting memorandum with Bear Stearns for the 1st quarter of 2006.

[94] Source: TM's internal quarterly meeting memorandum with Bear Stearns for the 2nd quarter of 2006.

[95] Source: The Bear Stearns Companies Inc. Financial Review - Quarter ended February 28, 2007 Meeting held April 18, 2007 and Conference call held on April 24, 2007.

[96] Source: TM's internal quarterly meeting memoranda with Bear Stearns for the 2nd quarter of 2007 and 3rd quarter of 2007.

to credit in a stressed environment where uncommitted lines might not be available.[97]

Internal TM memoranda indicate that TM believed that the secured funding initiative helped Bear Stearns weather the credit difficulties it faced during the summer of 2007, when two hedge funds sponsored by Bear Stearns' Asset Management (BSAM) failed.[98]

According to internal TM memoranda, Bear Stearns had a goal of arranging committed secured evergreen facilities with terms of six to twelve months. An evergreen facility allows a borrower to lock in funding for a predetermined minimum period of time. For example, in a six-month evergreen facility, the lender must give notice to terminate the facility six months before being entitled to start getting its money back. If Bear Stearns had such facilities, which were terminated, such terminations would have created potential financial stress for Bear Stearns with a known, contractually predetermined time lag. Therefore, it would have been important for TM to know about such terminations, in order for TM to anticipate the potential financial stress. OIG has asked TM for information concerning whether TM knew about terminations of any evergreen facilities providing secured collateralized lending to Bear Stearns, but OIG has been unable to determine what additional information TM had about any such facilities, including terminations.

To summarize, as early as November 2006, Bear Stearns was implementing a more realistic approach to liquidity planning than contemplated by the CSE programs' liquidity stress test. While this more realistic approach may have helped Bear Stearns in the summer of 2007, it was not sufficient to save the firm in March 2008. Bear Stearns' initiative to line up secured funding indicates that the crisis which occurred in March 2008 was not totally unanticipated by Bear Stearns, in that Bear Stearns had been taking specific steps to avoid such a crisis for more than a year before it occurred.

According to the expert retained by OIG in conjunction with this audit, the need for Basel II firms to undertake specific efforts to line up committed secured funding in advance of a stressed environment depends on the extent to which the Basel II firms can rely on secured lending facilities from the central bank

[97] Source: TM's internal quarterly meeting memorandum with Bear Stearns for the 3rd quarter of 2007.

[98] "By early summer 2007, the firm had made substantial progress on its [secured funding] initiatives, reducing commercial paper substantially and increasing the pool of liquidity available to the parent company. This progress proved to be very important. In August of 2007 the collapse of two Bear [Bear Stearns] managed hedge funds prompted S&P to change its outlook on Bear Stearns' debt to 'Negative'. This rating agency action and a poorly received investor call that followed led to some creditor anxiety around the Bear Stearns' name. Because of this idiosyncratic news, along with the general stress that began in the funding markets in August, OPSRA began monitoring Bear Stearns' liquidity on a daily basis. Obviously the funding enhancements that began in the earlier part of the year helped the firm in managing throughout these challenging times."
Source: TM internal memorandum with Bear Stearns for the 3rd quarter 2007 (file name: BS_risk iden_qtr3_2007_v2.doc).

during a liquidity crisis. On the one hand, if it is assumed that secured lending facilities will always be available from the central bank, lining up committed secured lending facilities is not necessary. In this case, a liquidity stress test, which assumes that secured lending facilities will automatically be available is appropriate. On the other hand, if it is assumed that collateralized central bank lending facilities might not be available during a time of market stress, Basel II firms have incentives to line up committed secured lending facilities, in advance, from other sources. In the context of CSE firms which are not banks, the policies of the Federal Reserve towards making collateralized loans to non-banks becomes an important element of their liquidity planning process.

Subsequent to the collapse of Bear Stearns, the Basel Committee released a draft set of updated guidelines concerning supervision of liquidity.[99]

Recommendation 2:
The Division of Trading and Markets, in consultation with the Board of Governors of the Federal Reserve System, should reassess pillar 2 of the Basel II framework and the Consolidated Supervised Entity (CSE) program guidelines regarding liquidity and make appropriate changes to the CSE program's liquidity requirements. Changes should describe assumptions CSE firms should be required to make about availability of secured lending in times of stress (including secured lending from the Federal Reserve) and should spell out circumstances in which CSE firms should be required to increase their liquidity beyond levels currently contemplated by CSE program liquidity requirements.

Finding 2: TM Did Not Adequately Address Several Significant Risks That Impact The Overall Effectiveness Of The CSE Program

> TM did not adequately address several significant risks, which affected the overall effectiveness of the CSE program. Notes from TM's meeting with Bear Stearns' management indicate that TM often discussed risks, which turned out to be relevant, but the discussions did not prompt TM to exert sufficient influence over Bear Stearns to make changes as a result of the risks identified.

Concentration of Assets

Bear Stearns had a high concentration of mortgage securities. Prior to Bear Stearns becoming a CSE, TM was aware that its concentration of mortgage securities had been steadily increasing. For instance, TM stated:

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[99] Source: Basel Committee on Banking Supervision. Principles for Sound Liquidity Risk Management and Supervision. June 2008 – Draft for Consultation. <http://www.bis.org/publ/bcbs138.pdf?noframes=1>.

> ... [Bear Stearns] continues to push for increased balance sheet and risk taking authority despite six limit increases since 2001. These increases have brought the total permitted balance sheet usage from less than $2 billion to over $6 billion.[100]

TM staff even found that the amount of mortgage securities was occasionally well beyond Bear Stearns' internal limits. For instance, TM stated:

> We [TM staff] will continue to discuss with risk management the size of the Adjustable Rate Mortgage ("ARM") business as it continues to operate *in excess of allocated limits*, reaching new highs with respect to the net market value of its positions.[101] [Emphasis Added]

Furthermore, according to TM's own documentation, a portion of Bear Stearns' mortgage securities (*e.g.,* adjustable rate mortgages) represented a significant concentration of market risk, as was evidenced by Bear Stearns' collapse. Paragraph 777 of Basel II framework states:

> In the course of their activities, supervisors should assess the extent of a bank's credit risk concentrations, how they are managed, and the extent to which the bank considers them in its internal assessment of capital adequacy under Pillar 2. Such assessments should include reviews of the results of a bank's stress tests. Supervisors should take appropriate actions where the risks arising from a bank's credit risk concentrations are not adequately addressed by the bank.[102]

Yet, notwithstanding these "red flags" that TM knew about, and warnings in the Basel standards, TM did not make any efforts to limit Bear Stearns' mortgage securities concentration.

Recommendation 3:
The Division of Trading and Markets should ensure that it adequately incorporates a firm's concentration of securities into the Consolidated Supervised Entity (CSE) program's assessment of a firm's risk management systems (*e.g.,* internal controls, models, etc.) and more aggressively prompts CSE firms to take appropriate actions to mitigate such risks.

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[100] Source: an internal TM memorandum dated November 15, 2004.
[101] Source: an internal TM memorandum dated March 2005. TM stated that it verified that Bear Stearns' senior management had granted temporary authority to exceed these limits.
[102] Source: Basel Committee on Banking Supervision: International Convergence on Capital Measurement and Capital Standards, June 2006, paragraph 777. < http://www.bis.org/publ/bcbs128.pdf>.

Leverage

Prior to the adoption of the rule amendments which created the CSE program, the broker-dealers affiliated with the CSE firms were required to either maintain:

- A debt to net capital ratio of less than 15 to 1(after their first year of operation); or
- Have net capital not less than the greater of $250,000 or two percent of aggregate debit items computed in accordance with the *Formula for Determination of Reserve Requirements for Broker-Dealers.*

However, the CSE program did not require a leverage ratio limit for the CSE firms. As a result, Bear Stearns was highly leveraged, with a gross leverage ratio of approximately 33 to 1 prior to its collapse.[103] Leverage can affect liquidity risk. For instance:

- The Counterparty Risk Management Policy Group (in June 1999)[104] stated:

  > The link between leverage and funding liquidity risk is relatively straightforward: leverage amplifies funding liquidity risk...

- The President's Working Group (PWG) on Financial Markets[105] Report (in April 1999) on Long-Term Capital Management (LTCM) stated:[106]

  > In addition, the liquidity risk of a hedge fund interacts with and is magnified by leverage, most clearly in distressed market circumstances.[107]

Although TM has maintained that leverage is not directly related to liquidity, it is clear that if a firm experiences a lack of confidence, its liquidity can be adversely affected and that leverage can influence confidence levels. Thus, it is entirely

[103] There are many definitions of leverage. Other firms also had high gross leverage amounts (*i.e.,* assets divided by stockholders' equity). See Appendix VI.

[104] "In January 1999, a group of 12 major, internationally active commercial and investment banks announced the formation of a Counterparty Risk Management Policy Group (CRMPG). The objective of the Policy Group, whose formation was endorsed by Chairman Greenspan [then Federal Reserve Chairman], Chairman Levitt [then Commission Chairman] and Secretary Rubin [then Secretary of the U.S. Department of Treasury], has been to promote enhanced strong practices in counterparty credit and market risk management." *Improving Counterparty Risk Management Policies*, Counterparty Risk Management Policy Group 2 (June 1999).

[105] In 1988, Executive Order 12631 established the President's Working Group (PWG). The PWG's purpose is "...enhancing the integrity, efficiency, orderliness, and competitiveness of our nations financial markets and maintaining investor confidence..." The PWG members are: the Chairmen of the Commission, the Commodities Futures Trading Commission, and the Federal Reserve; and the Secretary of the U.S. Department of Treasury.

[106] Long-Term Capital Management (LTCM) was a very large U.S. hedge fund that collapsed in 1998. However, apparently some counterparties treated LTCM as an investment bank and not a hedge fund.

[107] Although, Bear Stearns was not a hedge fund, we believe that the concept of leverage's relationship to liquidity still applies, especially since apparently some counterparties treated LTCM as an investment bank and not a hedge fund.

possible that Bear Stearns' high leverage contributed to a lack of confidence in the firm (including unsubstantiated rumors) which had an impact on its collapse. In fact, TM believed in early 2006 that Bear Stearns was still managing its balance sheet at quarter end, a practice which suggests that Bear Stearns was aware that its leverage ratios affected market perceptions.[108] Although banking regulators have established a leverage ratio limit, the CSE program has not established a leverage ratio limit.[109] The adoption of leverage limits must be reassessed in light of the circumstances surrounding the Bear Stearns' collapse, especially since some individuals believe that this policy failure directly contributed to the current financial crisis.

Recommendation 4:
The Division of Trading and Markets, in consultation with the Board of Governors of the Federal Reserve System, should reassess the Consolidated Supervised Entity (CSE) program's policy regarding leverage ratio limits and make a determination as to whether, and under what circumstances, to impose leverage ratio limits on the CSEs.

Bear Stearns' Model Review Process and Risk Management Staffing Were Inadequate in the Area of Mortgage Backed Securities

Prior to Bear Stearns' approval as a CSE in November 2005, OCIE found that Bear Stearns did not periodically evaluate its VaR models,[110] nor did it timely update inputs to its VaR models. Further, OCIE found that Bear Stearns used outdated models that were more than ten years old to value mortgage derivatives and had limited documentation on how the models worked.[111] As a result, Bear Stearns' daily VaR amounts could have been based on obsolete data. It was critically imperative for Bear Stearns' risk managers to review mortgage models because its primary business dealt with buying and selling mortgage-backed securities.

During the initial CSE application, TM staff raised concerns about model review scope regarding mortgages and other cash products. TM stated:

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[108] "(From a liquidity and funding perspective-it appears that both BS [Bear Stearns] and LB [Lehman Brothers] are still actively managing their balance sheets at quarter end, whereas this practice seems to have been mitigated substantially at MS [Morgan Stanley] and GS [Goldman Sachs Group, Inc.] based on the quarterly discussions with MS and GS Treasury departments)."
Source: TM credit meeting memorandum with Bear Stearns dated December 2005.

[109] However, there are some fundamental differences between commercial and investment banks. For instance, unlike investment banks, commercial banks rely on customer deposits.

[110] "Value at Risk (VaR) is the maximum loss not exceeded with a given probability defined as the confidence level, over a given period of time." Source: Wikipedia- The Free Encyclopedia. <http://en.wikipedia.org/wiki/Value_at_risk>.

[111] OCIE internal memorandum to Jeffrey M. Farber (Bear Stearns, Senior Managing Director), December 2 2005, page 8. Also see Finding 5.

> We believe it would be highly desirable for Independent Model Review to carry out detailed reviews of models in the mortgage area.[112]

At a meeting with TM on September 20, 2006, Bear Stearns' risk managers provided TM with a presentation concerning how its risk managers reviewed Bear Stearns' models to price and hedge various financial instruments. As a result of this presentation, TM concluded that Bear Stearns' model review process lacked coverage of mortgage-backed and other asset-backed securities, in part because the models were not used for pricing and in part because the sensitivities to various risks implied by the models did not reflect risk sensitivities consistent with price fluctuations in the market.[113] According to the OIG expert, this information is consistent with the interpretation that pricing at Bear Stearns was based more on looking at trading levels in the market than on looking at models. This information is also consistent with the interpretation that traders used their own models (perhaps empirically based) for hedging purposes and not the ones that the risk managers were reviewing. When markets are liquid and trading is active, market prices can be used to value assets accurately. In times of market stress, trading dries up and reliable price information is difficult to obtain. Models therefore become relatively more important than market price in times of market stress than in times when markets are liquid and trading actively. Such stressed circumstances force firms to rely more on models and less on markets for pricing and hedging purposes.

TM later learned that spikes in VaR resulted from disagreements between traders and risk managers concerning appropriate hedge ratios.[114] Traders often combine long and short positions together, using the short positions to hedge out some of the risks associated with long positions. For example, a trader might short a government bond to hedge the interest rate risk associated with a mortgage-backed security. To construct an appropriate hedge ratio, traders use information such as the sensitivity of the value of the assets to interest rate changes or interest rate spreads. At Bear Stearns, traders and risk managers sometimes disagreed concerning what these sensitivities were, and processes for handling these disagreements were built into the risk management process at Bear Stearns. A VaR model is intrinsically based on more information than a sensitivity of value to interest rate spread. A VaR model also incorporates an assumption about the ratio of spread changes in one asset to spread changes in another. A VaR model can therefore tell the trader an appropriate hedge ratio to use to reduce risks associated with fluctuations in spreads. At Bear Stearns, traders used hedge ratios that were consistent with the traders' own models even though the risk managers' VaR models indicated that different hedge ratios

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[112] Bear Stearns & Co. Inc. Consolidated Supervised Entity Market Risk Review, October 2005, page 44.
[113] Source: TM's internal Model Review Update memorandum dated September 20, 2006.
[114] Source: TM's internal credit meeting memorandum with Bear Stearns dated December 2006 and follow up notes memorandum dated February 9, 2007 and February 21, 2007.

would have been more appropriate.[115] Since VaR measures of risk reported to TM are based on the risk managers' models and not the traders' models, the reported VaR numbers suggested a risk that was different than the risks the traders thought they were bearing. The fact that VaR spiked as a result of these disagreements also raises the question of whether VaR risk measures were taken seriously enough by Bear Stearns' traders.

The OIG expert believes that interest rate and spread sensitivities were actively used as part of the discussion between risk managers and traders at Bear Stearns, but the OIG expert did not see evidence in TM memoranda that the additional modeling assumptions incorporated into VaR models added much to these discussions.

TM believed that Model Review at Bear Stearns was more of a support function and was less formalized than at other CSE firms.[116] Model validation personnel, modelers, and traders all sat together at the same desk.[117] According to the OIG expert, sitting together at the same desk has the potential advantage of facilitating communication among risk managers and traders but has the potential disadvantage of reducing the independence of the risk management function from the trader function, in both fact and appearance.

In 2006, the expertise of Bear Stearns' risk managers was focused on pricing exotic derivatives and validating derivatives models. At the same time, Bear Stearns' business was becoming increasingly concentrated in mortgage securities, an area in which its model review still needed much work. The OIG expert concluded that, at this time, the risk managers at Bear Stearns did not have the skill sets that best matched Bear Stearns' business model.

For instance, TM's discussions with risk managers in 2005 and 2006 indicated that Bear Stearns' pricing models for mortgages focused heavily on prepayment risks but TM's internal memoranda rarely mentioned how the models dealt with default risks.[118] Given the risk managers' lack of expertise in mortgages, it would have been difficult for risk managers at Bear Stearns to advocate a bigger focus on default risk in its mortgage models.

There was also turnover of Bear Stearns' risk management personnel at critical times. Bear Stearns' head of model validation resigned around March 2007, precisely when the subprime crisis was beginning to hit and the first large write-downs were being taken.[119] At exactly this point in time, Bear Stearns had a tremendous need to rethink its mortgage models and lacked key senior risk

[115] Source: TM's internal credit meeting memorandum with Bear Stearns dated December 2006 and follow up notes memorandum dated February 9, 2007 and February 21, 2007.
[116] Source: TM's internal Model Review Update memorandum dated September 20, 2006.
[117] Source: TM's internal Model Review Update memorandum dated September 20, 2006.
[118] Source: TM's internal credit meeting memoranda with Bear Stearns dated February 2006 and September 2004.
[119] Source: TM's internal credit meeting memorandum with Bear Stearns dated February 2007.

modelers to engage in this process. As a result, mortgage modeling by risk managers floundered for many months.[120] According to the OIG expert, this disarray in risk management tended to give trading desks more power over risk managers. In fact, there are indications (in internal TM memoranda from later monthly meetings between TM and Bear Stearns) that the risk manager who left had difficulty communicating with senior managers in a productive manner.[121] In the opinion of the OIG expert, difficulties in communication are a potential red flag indicating that a risk manager could be telling the traders to take on less risk than they would otherwise choose to do (*i.e.*, information that the traders would presumably not want to hear). This risk manager's eventual replacement was described as having some trading experience and therefore a potentially better skill set for communicating with trading desks.[122]

When a new senior risk manager (with expertise in mortgages) arrived in summer of 2007, TM was aware that there was a great need for risk management to work on mortgage models.[123] Instead, TM learned that the risk management process was operating in crisis mode, dealing with numerous issues related to price verification, markdowns, and disputes over collateral valuations with counterparties.[124] TM was aware that the model review function was typically understaffed at Bear Stearns for much of 2007.[125] As a result, the OIG expert concluded that the reviews of mortgage models that should have taken place before the subprime crisis erupted in February 2007 appears to have never occurred, in the sense that it was still a work in progress when Bear Stearns collapsed in March 2008.

To summarize, TM was aware that risk management of mortgages at Bear Stearns had numerous shortcomings, including lack of expertise by risk managers in mortgage-backed securities at various times; lack of timely formal review of mortgage models; persistent understaffing; a proximity of risk managers to traders suggesting lack of independence; turnover of key personnel during times of crisis; and an inability or unwillingness to update models quickly enough to keep up with changing circumstances. In 2006, TM missed an opportunity to push Bear Stearns aggressively to add expertise in mortgage modeling to the risk management staff, to review mortgage models in a timely manner, to add incorporate default rates into mortgage modeling, and to make sure that mortgage risk management could function efficiently in a stressed environment.

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[120] Source: TM's internal credit meeting memorandum with Bear Stearns dated April 2007, and Model Review Update memorandum involving Bear Stearns dated December 19, 2007.
[121] Source: TM's internal credit meeting memorandum with Bear Stearns dated March 2007.
[122] Source: TM's internal credit meeting memorandum with Bear Stearns dated March 2007.
[123] Source: TM's internal credit meeting memorandum with Bear Stearns dated July 2007.
[124] Source: TM's internal credit meeting memorandum with Bear Stearns dated July 2007.
[125] Source: TM's internal Model Review Update memorandum involving Bear Stearns dated December 19, 2007.

Recommendation 5:
The Division of Trading and Markets (TM) should ensure that: (1) the Consolidated Supervised Entity (CSE) firms have specific criteria for reviewing and approving models used for pricing and risk management, (2) the review and approval process conducted by the CSE firms is performed in an independent manner by the CSEs' risk management staff, (3) each CSE firms' model review and approval process takes place in a thorough and timely manner, and (4) impose limits on risk taking by firms in areas where TM determines that risk management is not adequate.

Risk Scenarios

When Bear Stearns applied to be a CSE, TM reviewed the independent risk management function at Bear Stearns in 2005.[126] In addition to VaR, Bear Stearns used stress scenarios to capture risks associated with history-based and hypothetical scenarios. TM reviewed a sample of a "Bear Stearns Scenario Summary Report." The report contains nine history-based scenarios which had been implemented (including the 1987 stock market crash and the 1998 LTCM crisis), eight hypothetical scenarios which had been implemented (including shocks to interest rates and interest rate spreads), and six additional proposed hypothetical scenarios, which appear not to have been implemented when Bear Stearns became a CSE.[127] Most of these proposed scenarios related to the market for residential mortgages. For example, the proposed scenarios contemplated shocking the credit spreads for both high grade and high yield mortgage-backed securities separately.

Bear Stearns' VaR models did not capture risks associated with credit spread widening of non-agency mortgages that are prime or near-prime (Alt-A).[128] Thus, the residential mortgage stress tests were potentially beneficial in that they quantified potential risks not otherwise captured. The OIG expert did not find documentary evidence indicating that these scenarios were actually implemented or subsequently discussed with TM until 2007. Furthermore, the OIG expert believes that meaningful implementation of high grade and high yield mortgage credit spread scenarios requires both a measure of sensitivity of mortgage values to yield spreads as well as a model of how fundamental mortgage credit risk factors make yield spreads fluctuate. These fundamental factors include housing price appreciation, consumer credit scores, patterns of delinquency rates, and potentially other data. These fundamental factors do not seem to have been incorporated into Bear Stearns' models at the time Bear Stearns became a CSE.

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[126] Source: TM Internal memorandum Bear Stearns & Co. Inc. Consolidated Supervised Entity Market Risk Review, October 2005, Appendix D: Scenario Analysis Summary Report.
[127] The scenario names are "MBS Underp. (Prepay Risk)," "HG MBS/ABS Underp. (Credit Risk)," "HY MBS/ABS Underp. (Credit Risk)," "Volatility Spike," "FNMA Problems," and "FHLMC Problems."
[128] Source: TM Internal memorandum Bear Stearns & Co. Inc. Consolidated Supervised Entity Market Risk Review, October 2005, Appendix D: Scenario Analysis Summary Report.

The presence of the proposed mortgage scenarios in the materials TM reviewed in 2005 indicates that both TM and Bear Stearns knew that incorporating these features into Bear Stearns' risk management was important for effective risk management. The absence of their implementation suggests that Bear Stearns did not have in place in 2005 the risk management technology needed to implement the scenarios in a meaningful manner.

According to internal TM memoranda, TM discussed several different risk scenarios with Bear Stearns' management. The most commonly-discussed stress scenarios mentioned in TM memoranda include the 1987 stock market crash, the 1998 collapse of LTCM and the 9/11 terrorist attacks, because these crisis scenarios resulted in the greatest potential losses. The OIG expert concluded based on a review of internal TM memoranda, that Bear Stearns' risk managers analyzed these risks carefully. Additionally, TM collected a great deal of information on other aspects of risk management, including the organizational structure of the risk management process, model verification, and price verification.

The OIG expert however, also concluded that the internal TM memoranda provide no discussion of the most serious forward-looking risk scenario that Bear Stearns might face, which was a complete meltdown of mortgage market liquidity accompanied by fundamental deterioration in the mortgages themselves, resulting from falling housing prices.

In April 2006 through June 2006, Bear Stearns briefed TM multiple times on problems faced by a United Kingdom mortgage originator subsidiary.[129] As a result of extremely poor performance of collateral, due to weak underwriting standards, Bear Stearns took losses associated with security originations by this subsidiary. In fact, an internal memorandum to TM's Division Director quoted the text of two newspaper articles chronicling this subsidiary's inability to meet its interest payments.[130] At the time of the news articles, Bear Stearns told TM that it was holding $1.5 billion in unsecuritized whole loans and commitments from this subsidiary, and TM believed that Bear Stearns would be unable to sell this commitment due to the negative publicity surrounding this subsidiary.[131] In focusing on Bear Stearns' problems with this subsidiary, the OIG expert believes that in 2006, TM identified precisely the types of risks that evolved into the subprime crisis in the U.S. less than one year later. Yet, TM did not exert influence over Bear Stearns to use this experience to add a meltdown of the subprime market to its risk scenarios. Moreover, TM did not use this event to exert influence on Bear Stearns to reduce its exposure to subprime loans, as previously discussed on page 17.

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[129] Source: TM's internal credit meeting memoranda with Bear Stearns dated April 2006, May 2006, and June 2006.
[130] Source: TM's internal credit meeting memorandum with Bear Stearns dated June 2006.
[131] Source: TM's internal credit meeting memorandum with Bear Stearns dated June 2006.

In terms of large drops in market prices and large asset write-downs on mortgage-backed securities, the subprime crisis began to affect the U.S. around December 2006. The drop in prices tended to hit residuals from mortgage securitizations first. When mortgages or other assets are securitized, the tranches, which have the highest certainty of payment, typically receive "AAA" ratings. The tranches with lowest credit quality are called "residuals," and these tranches bear credit losses before the higher rated tranches bear credit losses. In February 2007, Bear Stearns told TM that it had written $300 million of residuals down by $58 million in January 2007, after writing the residuals down by $25 million in December 2006.[132] Additional write-downs the following month brought total losses on second lien inventory to $168 million and total losses on residential mortgage backed securities and structured products to $240 million.[133] The write-downs during this quarter were mostly on residuals backed by second lien loans,[134] Alt-A loans,[135] and subprime mortgages.[136] TM described the residual write-downs as a meltdown that was worse than what Bear Stearns could have predicted over a year before Bear Stearns collapsed.[137]

Prior to these write-downs, in the fall of 2006, TM had focused on the risks associated with residuals and asked for detailed breakdowns of residuals by age and asset type. Bear Stearns' management told TM that it was moving away from holding residuals in its portfolio, was attempting to sell aging residuals, and was aware that its residuals on second lien mortgage securitizations were very risky.[138] In the months prior to Bear Stearns' taking these losses, Bear Stearns briefed TM on the rising delinquencies on subprime mortgages.[139]

The OIG expert believes that the greater risk was that the mortgage market would deteriorate further, with losses spreading from sub-prime loans to Alt-A loans and even to higher rated agency securities.[140] In fact, this scenario did unfold. TM discussed with Bear Stearns the market's heavy reliance on ratings agencies and the risks associated with ratings downgrades.[141] However, TM did not appear to have sufficiently encouraged Bear Stearns to incorporate into its risk management forward-looking risk scenarios based on risks identified and discussed during the regular monthly meetings between TM and Bear Stearns. Such scenarios could have included the consequences of much higher delinquencies on subprime and Alt-A mortgages, the consequences of rating

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[132] Source: TM's internal credit meeting memorandum with Bear Stearns dated January 2007.
[133] Source: TM's internal credit meeting memorandum with Bear Stearns dated February 2007.
[134] Second lien loans are home equity loans.
[135] An Alt-A mortgage is considered riskier than a "prime" mortgage, but not as risky as "subprime" mortgage.
[136] Source: TM's internal credit meeting memorandum with Bear Stearns dated January 2007.
[137] Source: TM's internal credit meeting memorandum with Bear Stearns dated January 2007.
[138] Source: TM's internal credit meeting memoranda with Bear Stearns dated August 2006 and September 2006.
[139] Source: TM's internal credit meeting memorandum with Bear Stearns dated November 2006.
[140] Source: TM's internal credit meeting memoranda with Bear Stearns dated January 2007 and February 2007.
[141] Source: TM's internal credit meeting memorandum with Bear Stearns dated December 2006.

downgrades on mortgage-backed securities, contagion and loss of liquidity from losses on mortgage-backed securities. By July 2007, deterioration of mortgages had spread to highly rated securities such as AAA paper backed by Alt-A mortgages, and Bear Stearns reported $570 million in losses for the month.[142]

Towards the end of 2007, Bear Stearns incorporated measures to reflect house price appreciation or depreciation into its mortgage models. It also developed a housing led recession scenario which it could incorporate into risk management and use for hedging purposes. By this time, Bear Stearns had large inventories of mortgage related assets, which had lost both their value and their liquidity. Since it was difficult for Bear Stearns to reduce its inventory by selling assets, this scenario helped Bear Stearns focus its attention on ways to hedge its mortgage risk by using more liquid instruments.

It is not the purpose of this discussion to claim that Bear Stearns' use of scenario analysis was better or worse than other CSE firms. TM asserts that Bear Stearns' use of scenario analysis was consistent with industry practices and the entire banking sector failed to anticipate the magnitude and scope of the housing decline that is still ongoing.

Recommendation 6:
The Division of Trading and Markets should be more skeptical of Consolidated Supervised Entity firms risk models and work with regulated firms to help them develop additional stress scenarios that may or may not have not have been contemplated as part of the prudential regulation process.

Recommendation 7:
The Division of Trading and Markets (TM) should be involved in formulating action plans for a variety of stress or disaster scenarios, even if the plans are informal, including plans for every stress scenario that the Consolidated Supervised Entity (CSE) firms use in risk management, as well as plans for scenarios that TM believes might happen but are not incorporated into CSE firms' risk management.

Non-compliance with Basel II

Mark Disputes
The subprime mortgage crisis began to affect the U.S. economy around December 2006. As the subprime crisis continued into the summer of 2007, TM learned that mark disputes were becoming more common.[143] A mark dispute can occur when two parties to a derivatives transaction, such as a swap, disagree over the value of the derivative. A mark dispute can also occur in a repurchase agreement (repo) transaction, when the borrower and the lender disagree over the value of the collateral. Mark disputes can lead the two parties

[142] Source: TM's internal credit meeting memorandum with Bear Stearns dated July 2007.
[143] Source: TM's internal credit meeting memorandum with Bear Stearns dated July 2007.

to a swap or financing transaction to each make margin calls on the other. During July 2007, Bear Stearns told TM that there were two large dealers with whom mark disputes were in excess of $100 million each.[144] Bear Stearns had thousands of trades with each of these two dealers. TM says that mark disputes are an unavoidable issue faced by all dealers (particularly when markets for underliers become less liquid), and the total disputed numbers at Bear Stearns are much smaller than at other institutions.

By March 2008, Bear Stearns' mark disputes involved even larger amounts. For example, on March 12, 2008, TM was told that Bear Stearns paid out $1.1 billion in disputes to numerous counterparties in order to squelch rumors that Bear Stearns could not meet its margin calls.[145]

There are indications in the TM memoranda that Bear Stearns tended to use the traders' more generous marks for profit and loss purposes, even when Bear Stearns conceded to the counterparty for collateral valuation purposes.[146] This practice allows two traders at different firms to record a gain at the expense of the other, despite the fact that the zero-sum nature of trading requires the net gain to be zero. One particularly large mark dispute, discussed in multiple meetings, involved Bear Stearns and another CSE. It is inconsistent with the spirit of Basel II for two firms to use a mark dispute as an occasion to increase their combined capital, as would occur when both parties to a trade book profit at the expense of the other simply because they each mark positions favorably for themselves. While TM memoranda indicate that TM had several discussions with Bear Stearns' risk managers about this particular mark dispute, the OIG expert found no evidence from reviewing internal TM memoranda that TM encouraged the CSE firms to adopt mutually consistent marking practices that avoid the use of collateral disputes to create apparent capital in a manner inconsistent with Basel II. Since mark disputes tend to occur on illiquid positions that are hard to value, conservative valuation adjustments consistent with Basel II[147] should theoretically result in a situation where the long side of a trade is carried at a lower value than the short side; i.e., when netted across two firms with offsetting long and short positions, appropriately conservative valuations should appear to reduce capital, not increase it.

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144 Source: TM's internal credit meeting memorandum with Bear Stearns dated July 2007.

145 Source: TM internal memorandum from March 2008 (filename: Bear Stearns March Notes - SMS.doc).

146 Source: TM's credit meeting memorandum with Bear Stearns dated March 2007, states: "We also asked how helpful the counterparty collateral process was for informing the price verification process. Kan said the collateral process does not tend to lead to changes in marks for P/L purposes – suggesting it was not helpful – but Mike Alix [Chief Risk Officer, Bear Stearns] said it could be helpful not sure if the mortgage guys actually gave a straight answer)."

147 Source: Basel Committee on Banking Supervision: International Convergence on Capital Measurement and Capital Standards, June 2006, paragraph 700. < http://www.bis.org/publ/bcbs128.pdf>.

Recommendation 8:
The Division of Trading and Markets should take steps to ensure that mark disputes do not provide an occasion for Consolidated Supervised Entity firms to inflate the combined capital of two firms by using inconsistent marks.

Inconsistent VaR Numbers
According to an internal TM memorandum, there were occasions when Bear Stearns' risk managers had difficulty explaining changes in VaR numbers from one month to the next.[148] For example, when markdowns on assets occurred, Bear Stearns' risk managers had difficulty explaining whether the markdowns were a delayed response to market moves resulting in changes in VaR risk factors or updates based on asset specific information (such as delinquency rates on individual assets).

In some cases, Bear Stearns' risk managers had difficulty explaining how firmwide VaR numbers were related to desk-specific VaR numbers. The OIG expert believes that this occurred because each of Bear Stearns' trading desks evaluated profits and risks individually, as opposed to relying on one overall firm-wide approach. On some occasions, Bear Stearns' several trading desks had opposite positions in various instruments (*e.g.*, some desks were long sub-prime while other desks were short sub-prime), and Bear Stearns used VaR numbers more for regulatory reporting than for internal risk management. This inconsistency between use of VaR for internal and regulatory reporting purposes does not comport with the spirit of Basel II and makes it harder for TM to understand what is going on inside the firm. TM encouraged Bear Stearns to do a better job of presenting risks in a manner that made it easier to understand the relationship between firm-wide desk-level risks. Bear Stearns' risk management was working on improved reporting, perhaps influenced by TM's encouragement.

Recommendation 9:
The Division of Trading and Markets should encourage the Consolidated Supervised Entity (CSE) firms to present VaR and other risk management data in a useful manner, which is consistent with how the CSE firms use the information internally and which allows risk factors to be applied consistently to individual desks.

Bear Stearns' Capital Requirements for Illiquid Assets and Stressed Repos Require Careful Oversight.

As the subprime crisis worsened in June 2007, the market began to freeze up and formerly liquid assets lost much of their liquidity. Bear Stearns told TM that it found it difficult to find ways to establish objective market values for assets as they became more thinly traded and therefore, less liquid. TM stated that, in some instances, TM required a full deduction for certain illiquid assets, such as mortgage residuals. Since the decline in liquidity of many mortgage-related

[148] Source: TM's internal credit meeting memorandum with Bear Stearns dated May 2007.

assets was so unprecedented, and the decline in liquidity increased the difficulties associated with valuing such illiquid assets, it would have been prudent for TM to consider expanding the list of assets that require a full deduction from capital. The OIG expert was unable to find documentary evidence that TM considered expanding the list of assets that required a 100% capital deduction.

When the Basel Standard is operating correctly, firms take markdowns on the value of trading book assets as the value of the assets decline. When market illiquidity increases and assets become more difficult to value, these markdowns should include valuation adjustments which not only take account of declining market values but also add an element of conservatism based on widening bid-ask spreads and the high costs that would be been incurred by a firm to liquidate its assets in a stressed environment.[149] These markdowns result in a decline in Tier 1 capital.

At times of market stress, when banks often need to take large markdowns, raising additional Tier 1 capital is often very expensive, due to factors such as a bank's falling stock price and negative signaling concerns, which could cause a bank's stock price to fall even further. In such circumstances, banks have a perverse incentive (associated with what is called "moral hazard") to postpone taking markdowns that would require the banks to raise additional capital. As an alternative to taking markdowns while continuing to hold assets whose value is questionable, banks have an incentive to consider selling such assets into the market. When selling an asset, Tier 1 capital is reduced by the amount of losses on the sale, but capital requirements are also reduced by removing the asset from the bank's portfolio. A bank looking to improve its Basel capital ratios by selling assets therefore has a perverse incentive not to sell assets that have modest capital requirements relative to the markdowns the banks should have taken but has not yet taken. This perverse incentive tends to amplify the tendency for markets to freeze up and become illiquid by reducing trading volume that would otherwise occur as banks sell losing positions into the market. On the one hand, these perverse incentives are mitigated to the extent that capital requirements on such assets are high and valuations are appropriately conservative. For assets that face a 100% capital haircut, for example, the bank gains no improvement in its capital ratios by avoiding taking a markdown, and the bank increases its capital by the proceeds of any asset sales. On the other hand, these perverse incentives are worsened to the extent that supervisors allow banks to avoid marking assets down quickly enough, to avoid taking appropriate valuation adjustments in a timely manner, or to understate assets' risks.

As the subprime crisis worsened, numerous Bear Stearns' repo counterparties, such as hedge funds with positions in mortgage related assets, suffered losses

[149] Source: Basel Committee on Banking Supervision: International Convergence on Capital Measurement and Capital Standards, June 2006, paragraph 700. < http://www.bis.org/publ/bcbs128.pdf>.